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Federal Communications Commission
Office of the Secretary



May 8, 2007

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Ex Parte

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, S.W.
Washington, D.C. 20554

ORIGINAL

Re: National Exchange Carrier Association, Inc.'s Proposed 2007 Modification of Average Schedule Formulas WC Docket No.06-223

Dear Ms. Dortch:

In its February 13, 2007 comments in the above-referenced proceeding, Verizon asked the FCC to reject NECA's request to delay the reduction of NECA carriers' settlements over two years. Additionally, Verizon explained that NECA has failed to submit sufficient data to substantiate its average schedule calculations. The attached declaration from Gustavo Hamberger, Ph.D and Lynette Neumann, Ph.D provides additional evidence regarding the insufficiency of NECA's cost data. Verizon requests that this declaration be placed in the record.

Please do not hesitate to contact me if you have any questions about this matter.

Sincerely,

Donna Epps

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. **20544**

In the Matter of

National Exchange Carrier Association, Inc.'s
Proposed 2007 Modification of Average
Schedule Formulas

WC Docket No. 06-223

Declaration of **Gustavo** Bamberger and Lynette Neumann

I. INTRODUCTION

1. I, Gustavo Bamberger, am a Senior Vice President of Lexecon, an economics consulting firm that specializes in the application of economics to legal and regulatory issues. I received a B.A. degree from Southwestern at Memphis, and M.B.A. and Ph.D. degrees from the University of Chicago Graduate School of Business. I have previously provided expert testimony to the U.S. Federal Communications Commission ("the Commission"), the U.S. Senate, the U.S. Federal Energy Regulatory Commission, the U.S. International Trade Commission, the U.S. Department of Transportation, state regulatory agencies, the Canadian Competition Tribunal, the New Zealand Commerce Commission and the High Court of New Zealand. A copy of my curriculum vita is attached as Exhibit A to this declaration.

2. I, Lynette Neumann, am a Vice President of Lexecon. I received a B.A. degree from Millikin University, and M.S. and Ph.D. degrees from Cornell University. I have previously provided expert testimony to the Commission. My curriculum vitae is attached as Exhibit B to this declaration.

3. We have been asked by counsel for Verizon to review the proposed 2007 Modification of Average Schedule Formulas filed by the National Exchange Carrier Association,

Inc. ("NECA"), including a data CD containing electronic files provided by NECA to the Commission.'

4. In its filing, NECA claims that it provided in "attached appendices" all the data needed to "enable the Commission and interested parties to verify NECA's Study results."² As we explain in this declaration, we disagree with NECA's claim.³ First, NECA provides only general descriptions of several of its analyses; these general descriptions are not sufficiently detailed to allow the Commission or other interested parties to verify NECA's results. Second, we are unable to replicate the results of other NECA analyses for which NECA provides more detailed explanations. Third, NECA fails to show that a more than \$100 million adjustment it makes to the total revenue requirements it claims NECA members should receive are justified by additional costs borne by NECA members. This adjustment is so large that the average rate of return actually earned by NECA members could be more than double the mandated rate of 11.25 percent.

5. NECA's analysis consists of four major steps. In the remainder of this declaration, we explain, for each major step, why NECA has not provided all the information that the Commission and interested parties would need to verify its analysis.

II. Step 1: Cost Company Allocation **Models**

6. NECA describes its "Cost Company Allocation Models" in Section IV of its filing. NECA estimates two types of models – "cost separation" models and "access category

1. 2007 Modification of Average Schedules, National Exchange Carrier Association, Inc., 2007 Modification of Average Schedules, WC Docket No. 06-223 (Dec. 21, 2006) ("*2007 Modification of Average Schedules*"), at I-4.
2. 2007 Modification of Average Schedules, at I-4.
3. The CD produced by NECA contains files that are electronic versions of information contained in the data appendices to NECA's hard copy submission and two spreadsheets with additional information. These two additional spreadsheets contain information that is relevant only for one portion of NECA's analysis (we discuss this information in Section V of this declaration).

allocation" models. NECA estimates large numbers of each type of model. For example, NECA reports estimates for over 30 cost separation models.⁴

7. The "cost separation" models – also referred to as "Part 3 6 models – are used to estimate the interstate proportion of a cost category (e.g., Interstate Cat. 2 Central Office Equipment ("COE") as a percentage of total COE).⁵ The "access category allocation" models – also referred to as "Part 6 9 models – are used to apportion the interstate cost in a category into four subcategories: common line ("CL"); central office ("CO"); special access ("SA") and transport ("TR").

8. Several of these models are based on a standard statistical technique known as "regression" analysis. In regression analysis, a variable of interest – typically referred to as a "dependent" variable – is modeled as a function of one or more "explanatory" variables. For example, suppose an analyst were interested in the effect of rainfall and amount of fertilizer on crop yield on a plot of land. A regression model could be developed in which yield is the "dependent" variable and rainfall and fertilizer are the "explanatory" variables. Such a model could allow an analyst to predict the effect of increasing fertilizer usage on crop yield (while also accounting for the effect of rainfall).

9. For example, NECA uses a regression model to estimate the proportion of Total COE that is attributable to Interstate Cat. 2 COE. NECA's analysis produces the equation:

$$\text{Proportion} = 0.015295 + 0.001166 \times \text{Interstate Toll Circuit Miles per Line.}$$

In this regression model, the variable that is being "explained" – in this case, *Proportion* – is the dependent variable. In this model, there is only one explanatory variable (Interstate Toll Circuit Miles per Line). The numerical values in the equation (e.g., 0.001166) are referred to as "regression coefficients" and measure the magnitude of the effect of changes in an explanatory variable. For example, the results of this model imply that an increase in Interstate Toll Circuit

4. See 2007 Modification of Average Schedules, Exhibit 4.3, at IV-22 to IV-30

5. See 2007 Modification of Average Schedules. at IV-22.

Miles per Line of 100.0 is associated with an increase in *Proportion* of 0.1166 (i.e., 100.0 times 0.001166), or 11.66 percent. That is, NECA finds that the proportion of Total COE that is attributable to Interstate Cat. 2 COE is relatively high for companies with relatively high values of Interstate Toll Circuit Miles per Line.

10. Each of the Part 36 and Part 69 models is based on information from up to 200 "cost companies." The "dependent variables" for these 200 companies are reported in Appendix B-1 to the NECA filing. At least some of the "explanatory variables" for all 200 companies are reported in Appendix D-2. In particular, Appendix D-2 contains information for the following potential explanatory variables: Exchange Count, Access Lines, CL Minutes of Use, TS Minutes of Use, Interstate Toll Circuit Miles, *Host* Remote Circuit Miles, Circuit Miles, Switched Terminations, *Imputed* Host Remote Circuits, *Imputed* ITD and *Adjusted* Special Access Revenues.⁶ Appendix D-2 **also** includes, for each of the 200 cost companies: Data Collection Year; Sample Weight. *TS* Participant and Special Access Indicator.

11. Although NECA reports the dependent and independent variables for its model of the proportion of Total COE that is attributable to Interstate Cat. 2 COE, we have not been able to replicate NECA's results. NECA calculates a "variance weight" for each model for each cost company included in that model.⁷ NECA describes how it calculates these "variance weights," but the weights are not reported in the NECA filing. We have attempted to create these "variance weights" based on NECA's description. However, when we estimate a model of the proportion of Total COE that is attributable to Interstate Cat. 2 COE using the dependent and independent variables reported in the NECA filing appendices, and apply the "variance weights"

6. The variable Interstate Toll Circuit Miles per Line used in the interstate Cat. 2 COE model apparently is derived from the information in Appendix D-2 by dividing the variable Interstate Toll Circuit Miles by the variable Access Lines. Other variables used in NECA's analysis do not appear in Appendix D-2 but apparently are available in earlier NECA filings (e.g., *DEM* Weight) or can be derived from other information reported in NECA's filing.

7. See 2007 Modification of Average Schedules, at IV-11 to IV-14.

we constructed based on NECA's description, our estimated regression coefficients do not match those reported in NECA's filing.

III. Step 2: Data Projections

12. In Section V of its filing, NECA presents a variety of models that forecast various measures of demand in the future (through June 2008). NECA fails to provide all of the information needed to verify these analyses.

13. For example, NECA uses an Access Minutes Econometric Model to forecast future traffic sensitive minutes of use ("*TS-MOU*") for the 12 months ending June 2008, but fails to provide all of the information needed to verify this model.⁸ The dependent variable in NECA's "Access Minutes Econometric Model" is monthly TS-MOU; the explanatory variables in the model include the consumer price index; a price index for cellular services; a measure of disposable income; and employment. NECA reports that information "from January 1999 through July 2006, including all adjustments through October 2006, were used to develop the

14. Although data values for the dependent and independent variables of NECA's Access Minutes Econometric Model are contained in Appendix D-4, Appendix D-4 contains monthly data only for the period January 1999 through May 2006. Thus, either NECA's description of its analysis (i.e., it is based on information "through July 2006, including all adjustments through October 2006") is incorrect, or NECA failed to provide all of the data it relied on (i.e., NECA does not provide information for June and July 2006).

15. Furthermore, NECA reports that its Access Minute Growth Rate "model was corrected for autocorrelation."¹⁰ "Autocorrelation" refers to a statistical property of the data

8. See *2007 Modification of Average Schedules*, at IV-23, Exhibit 5.4, at V-18.

9. *2007 Modification of Average Schedules*, at V-14.

10. *2007 Modification of Average Schedules*, at V-17.

underlying a regression model. When it is present, there are several standard techniques available to correct for autocorrelation. Different autocorrelation-correction techniques typically will not generate identical results. However, NECA does not identify which technique it used to correct for autocorrelation.¹¹

16. NECA also forecasts future monthly access lines using a series of regression models in which Access Lines is the dependent variable and "trend" and "step" variables are explanatory variables.¹² NECA estimates three separate models – one for companies with less than 1,000 access lines; a second for companies with between 1,000 and 7,500 access lines; and a third for companies with more than 7,500 access lines. NECA reports that it "tested several stratification models containing various breakpoints and found that the most statistically significant differences in access line growth rates occurred when 1,000 and 7,500 access lines were used to group sample study areas."¹³

17. NECA does not provide any of the results of its "tests" of "several stratification models" – for example, it does not discuss which alternative "breakpoints" it considered. Furthermore, NECA does not explain how it determined that the "most statistically significant differences in access line growth rates" occurred at the breakpoints it selected.

11. According to NECA's model, TS-MOU depends on contemporaneous values of prices, income and employment. Thus, NECA's model implies that TS-MOU for June 2008, for example, depends (in part) on prices, income and employment in June 2008. Because NECA's model projects TS-MOU for the period July 2007 – June 2008 from the values of estimated prices, income and employment for the same period, NECA also uses projected prices, income and employment through June 2008. For several of the variables, NECA reports that it uses forecasts derived by Macroeconomic Advisers, LLC, but NECA does not provide this information (see *2007 Modification of Average Schedules*, at V-15). For the price index for cellular services, NECA reports that "it is assumed that nominal price of cellular services will decline very slowly in the months following July 2006. (This trend extrapolates the average cellular price trend that began in January 2003.)" (*2007 Modification of Average Schedules*, at V-16.) NECA does not describe how it extrapolated the average cellular price trend.

12. See *2007 Modification of Average Schedules*, at V-20.

13. *2007 Modification of Average Schedules*, at V-20.

IV. Step 3: Average Schedule Company Part 36 and Part 69 Costs

18. In Section VI of its filing, NECA explains how it derives "revenue requirements" for each of the average schedule companies. An adjustment is later made to the estimated revenue requirements to produce NECA's estimated settlement amounts. NECA fails to provide all of the information needed to verify these analyses.

19. The analysis in this section begins by applying the models developed in Section IV to cost information for the average schedule companies. NECA uses these models to estimate, for example, the interstate portion of Telecommunications Plant in Service – and how those costs are divided between CL, CO, TR and SA – for each of the average schedule companies (e.g., Pine Tree Tel. & Tele. Co.).¹⁴ NECA uses these estimates as inputs in later portions of its analysis, but does not report them.

20. NECA presents only the weighted aggregate results of applying its Part 36 and Part 69 models to average schedule companies. For example, NECA reports that, in the aggregate, the interstate portion of Telecommunications Plant in Service is \$2,283,094,880. Of this amount, 43.6456 percent is attributable to CL; 26.0172 percent to CO; 14.2904 percent to TR; and 16.0452 percent to SA.¹⁵ NECA uses the aggregate amounts it derives for these cost categories to estimate aggregate Federal Income Taxes, Allowance *For* Funds Used During Construction, Expenses & Other Taxes and Average Net *Investment*.¹⁶ From these estimates, NECA derives an aggregate annual revenue requirement, which equals:

Total Expenses & Other Taxes + Average Net *Investment* x 0.7725 + Federal Income Tax - Allowance *For* Funds Used During Construction. "

21. Based on its aggregate estimates, NECA reports an aggregate revenue

14. Pine Tree Tel. & Tele. Co. is identified by study area code 100020; **see** Appendix C-1 and Appendix H.

15. See 2007 *Modification of Average Schedules*, Exhibits 6.8 and 6.9, at VI-9 and VI-IO.

16. See 2007 *Modification of Average Schedules*, Exhibits 6.7, at VI-9.

17. See 2007 *Modification of Average Schedules*, at VI-14.

requirement of \$523,383,385. That is. NECA's estimates imply that – given estimated expenses and taxes – the average schedule companies would each earn a rate of return of 11.25 percent on their relevant assets if, in the aggregate, these firms received settlement payments of \$523,383,385.

22. However, in Section VII of its filing, NECA explains that its estimate of the "Overall Total" settlement is \$53,336,272 per month, or \$640,035,264 for the year beginning July 2007.¹⁸ Thus, the "Overall Total" settlement amount exceeds the "revenue requirements" estimated in Section VI of the NECA filing by \$116.65 million. We have not been able to identify any analysis by NECA that purports to show that this additional \$116.65 million in proposed payments is justified by additional costs or investments that are not reflected in NECA's analysis of revenue requirements

23. NECA's "revenue requirement" is based on an Average Net *Investment* of \$681,133,772.¹⁹ Thus, the "return" earned by NECA companies is $\$681,133,772 \times 0.1125 = \$76,627,549$, and so NECA's estimated revenue requirement of \$523.38 million consists of \$76.63 million in return on assets (i.e., Average Net Investment), and \$446.75 million to pay for expenses, taxes, and an allowance for funds used during construction (i.e., \$446.75 million equals the total revenue requirement of \$523.38 million minus the return on assets of \$76.63 million). NECA fails to quantify any additional costs or investments that would justify an additional \$116.65 million in proposed payments.

18. See 2007 Modification of *Average* Schedules, Exhibit 7.20, at VII-66.

Of the monthly total, two small components are not allocated to the "pool" – CL Central Office Not in TS Pool (\$240,661) and CL Transport Not in TS Pool (\$169,336). Subtracting these amounts leaves a monthly total of

$$\$53,336,272 - \$240,661 - \$169,336 = \$52,926,275$$

This amount is same (except for a \$4 difference probably due to rounding) as the amount reported as "Proposed Total Settlement" on the last page of Exhibit E (at E-14).

19. See 2007 Modification of *Average* Schedules, Exhibit 6.7, at VI-9.

24. Because it is not clear what additional costs or investments (if any) are associated with the \$116.65 million adjustment, NECA's results, if accepted, may allow the average schedule companies to earn far more than the mandated rate of return. For example, suppose that only \$20 million in additional costs is associated with the additional payment. Then the remainder – i.e., \$96.65 million – would represent a return on NECA's assets. As a result, NECA's actual rate of return on its assets would equal 25.4 percent, more than double the mandated rate of 11.25 percent.²⁰

V. Step 4: Settlement Formula Development

25. In Section VII of its filing, NECA describes how it develops a variety of "average schedule settlement formulas."²¹ The results of these models are used to derive two "proposed settlement" amounts – "proposed common line settlement" and "proposed traffic sensitive settlement" – for average schedule companies.²² In the data CD it filed, NECA provided two electronic files in spreadsheet form that contain additional information relevant to the analyses in Section VII of its filing. However, these spreadsheets do not allow the Commission or other interested parties to verify NECA's settlement formula analysis. First, the additional data files contain apparent inconsistencies. Second, NECA fails to provide additional information that would be needed to verify several of its regression analyses. Third, even with the supplemental information provided by NECA, we have not been able to verify NECA's results.

20. In this example, NECA members' total returns on assets would equal \$76.63 million plus \$96.65 million, or \$173.28 million, which equals 25.4 percent of Average Net Investments of \$681.13 million. If the proposed "transition payments" to NECA members are included in the analysis, NECA members would receive a rate of return higher than 25.4 percent.

21. See 2007 Modification of Average Schedules, at VII-1

22. See, for example, 2007 Modification of Average Schedules, Appendix E.

A. The Additional Data Files Contain Apparent Inconsistencies

26. One of the additional spreadsheets provided by NECA in its supplemental filing ("Formula_Support_dataFCC.xls") contains a worksheet entitled "Data Supporting Development of Central Office Settlement Formula in 2006 Average Schedule Study." That worksheet contains, by individual average schedule company, variables including: Monthly CO Revenue Requirement, Exchanges, Projected Access Lines and Projected Access Minutes. A different worksheet in the same file, entitled "Data Supporting Development of Common Line Settlement Formula in 2006 Average Schedule Study," contains, by individual average schedule company, variables including: Monthly CL Revenue Requirement, Exchanges and Projected Access Lines.

27. For several average schedule companies, the two spreadsheets report substantially different values for Projected Access Lines. For example, for the average schedule company with ID 100020, *Projected Access Lines* is 7,294 in the "Central Office" worksheet, but 6,512 in the "Common Line" worksheet. Similarly, for the average schedule company with ID 170193, *Projected Access Lines* is 79,261 in the "Central Office" worksheet, but 67,062 in the "Common Line" worksheet. For other companies, *Projected Access Lines* are the same in both worksheets (e.g., for the average schedule company with ID 120042, *Projected Access Lines* is 451 in both worksheets).

28. In Section V, NECA describes its forecast model for Access Lines and reports that "[e]ach sample company was then assigned to a stratum, based on its access line size [e.g., less than 1,000 access lines]. Forecasted test period average access lines for each sample study area was computed by multiplying base period average access lines by the appropriate Stratified Access Line Growth Ratio."²³ Based on NECA's description of its model for projecting Access Lines, it is unclear how a single average schedule company could have

23. See 2007 Modification of Average Schedules, at V-25

two different values for Projected Access Lines. Thus, the data CD provided by NECA appears to contain at least several inconsistencies.

B. NECA Fails to Provide Additional Information that Would be Needed to Verify Several of its Regression Analyses

29. The additional data ~~is~~ provided by NECA contain data that underlie NECA's average settlement formulas. However, the files do not contain the computer programs that were used to estimate the formulas from those data. Because NECA often supplies only a general description of the statistical techniques it uses to derive its formulas, it is likely not possible to verify NECA's results.

30. For example, in its description of its "Common Line Access Formula," NECA states:

Three lines per exchange breakpoints which delimit the groups of study areas with lower values of lines per exchange from those above (K_1), the midrange values of lines per exchange from those above (K_2), and the upper values of lines per exchange from those below (K_3). The latter two limits were determined by graphical analysis to be 10,000 and 15,000 respectively. The lower lines-per-exchange delimiter was resolved by regression methods.²⁴

However, NECA provides no information on what "regression methods" were used to determine the "lower lines-per-exchange delimiter" (i.e., the value of K_1).

31. Similarly, NECA explains that its settlement formula for "Central Office Formula – Local Switching Only" is based on an "Iterative Process for Determining Initial Central Office Formula Coefficients."²⁵ NECA does not explain how this "iterative process" was implemented. For example, NECA reports that the set of model coefficients it selected for this model "did as well or better than any other in Mean Relative Absolute Deviation of high volume data, a measure developed by NECA for models that target a particular set of high variance data."²⁶

24. 2007 Modification of Average Schedules, at VII-3.

25. *See* 2007 Modification of Average Schedules, Exhibit 7.5, at VII-24

26. 2007 Modification of Average Schedules, at VII-25.

This comment suggests that the iterative process was used to minimize "Mean Relative Absolute Deviation of high volume data" – i.e., "a measure developed by NECA – but NECA does not provide any information on its approach.

32. NECA also explains that it "estimated the coefficients of the Route Length model using constrained linear regression methods and NECA's standard regression outlier weighting method."²⁷ The phrase "constrained linear regression methods" can refer to a variety of approaches, but NECA does not provide any information (such as computer code) that would allow the Commission or other interested parties to verify its results.

C. Additional Data Provided by NECA does not Appear to be Consistent with Results Reported in NECA's Filing

33. Some of the analyses reported by NECA in Section VII of its filing are based on what appear to be straightforward calculations. However, when we apply NECA's description of its approach to the data it provided, we are unable to match the result NECA provides in its filing.

34. For example, NECA's "Central Office Formula – Local Switching Only" model is derived from a variety of steps and is based in part on what NECA calls the Baseline Cost Per Minute. In its filing, NECA explains that Baseline Cost Per Minute equals "the average monthly CO revenue requirement per minute among average schedule study areas having more than 20,000 access lines."²⁸ In particular, NECA defines Baseline Cost Per Minute as

$$\frac{\sum (\text{Sample Weight} \times \text{Monthly CO Revenue Requirement} \times \text{Variance Weight})}{\sum (\text{Sample Weight} \times \text{Access Minutes} \times \text{Variance Weight})}$$

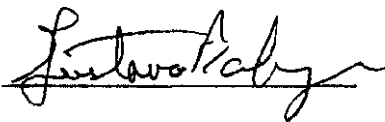
for average schedule companies with more than 20,000 access lines. NECA reports that "[t]his calculation produced a baseline cost per minute equal to 0.016298."²⁹

27. 2007 Modification of Average Schedules, at VII-39.

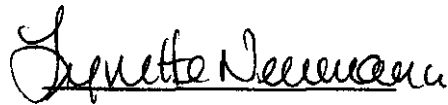
28. 2007 Modification of Average Schedules, at VII-19.

29. 2007 Modification of Average Schedules, at VII-19.

35. Each of the three variables used to construct Baseline Cost Per Minute – that is, Sample Weight, Monthly CO Revenue Requirement and Variance Weight – are contained in the spreadsheets provided by NECA.³⁰ However, when we estimate Baseline *Cost Per Minute* from these data, our calculation produces a value of 0.015916. That is, we are not able to verify NECA's estimate of Baseline Cost Per Minute from the data it provided and its description of the calculation in its filing.



Gustavo Bamberger



Lynette Neumann

May 4, 2007

30. We identify which of the average schedule companies have 20,000 or more access lines from information contained in Appendix D-1 to NECA's filing. However, there are six companies contained in NECA's spreadsheets (IDs 351260, 351306, 351309, 351405, 361375 and 391657) which are not included in Appendix D-1, and thus we do not have access line information for these firms. Because Projected Access Lines are substantially less than 20,000 for each of these six firms, we exclude them from our calculation of Baseline Cost Per Minute. It is not clear why information for these **six** firms **is** included in the spreadsheets but not in Appendix D-1.

Exhibit A

GUSTAVO E. BAMBERGER
Economist

April 2007

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EDUCATION

Ph.D., UNIVERSITY OF CHICAGO, 1987, GRADUATE SCHOOL OF BUSINESS
M.B.A., UNIVERSITY OF CHICAGO, 1984, GRADUATE SCHOOL OF BUSINESS
B.A., SOUTHWESTERN AT MEMPHIS, 1981

EMPLOYMENT

LEXECON, Chicago, Illinois (3/87-Present): Senior Vice President
UNIVERSITY OF CHICAGO, (1984, 1986): Lecturer
GOVERNORS STATE UNIVERSITY, (1986): Community Professor
UNIVERSITY OF CHICAGO, (1982-1986): Teaching Assistant
UNIVERSITY OF CHICAGO, (1982-1986): Research Assistant

ACADEMIC HONORS AND FELLOWSHIPS

University of Chicago Fellowship, 1981-1984
H.B. Earhart Fellowship, 1985-1986

RESEARCH PAPERS

"Antitrust and Higher Education: Was There a Conspiracy to Restrict Financial Aid?"
co-authored with D. Carlton and R. Epstein, RAND Journal of Economics, (Vol. 26, No. 1, Spring 1995, pp. 131-147).

"Antitrust and Higher Education: MIT Financial Aid (1993)," co-authored with D. Carlton, in The Antitrust Revolution: Economics, Competition, and Policy, John Kwoka and Lawrence White, eds., 1998.

"Airline Networks and Fares", co-authored with D. Carlton, in Handbook of Airline Economics, 2nd ed., Darryl Jenkins, ed., 2003.

"Revisiting Maximum Resale Price Maintenance: State Oil v. Khan (1997). in The Antitrust Revolution: Economics, Competition, and Policy, John Kwoka and Lawrence White, eds., 2004.

"An Empirical Investigation of the Competitive Effects of Domestic Airline Alliances," co-authored with D. Carlton and L. Neumann, Journal of Law and Economics, (Vol. 47, No. 1, April 2004, pp. 195-222).

"Predation and the Entry and Exit of Low-Fare Carriers," co-authored with D. Carlton, in Advances in Airline Economics: Competition Policy and Antitrust, Darin Lee, ed., 2006.

TESTIMONIAL EXPERIENCE

Direct. Rebuttal and Cross-Examination Testimony of Gustavo E. Bamberger on behalf of Producer - Marketers Transportation Group, before the Illinois Commerce Commission in Docket No. 90-0007, April 24, 1990 (Direct); July 6, 1990 (Rebuttal); and May 30, 1990 and August 3, 1990 (Cross-Examination).

Testimony of Gustavo E. Bamberger in Re: United States of America v. Irving A. Rubin: In the U.S. District Court for the Northern District of Illinois, Eastern Division, No. 91 CR 44-2, December 3, 1993.

Testimony of Gustavo E. Bamberger in Re: Center for Public Resources Arbitration, E. Merck and EM Industries. Incorporated. against Abbott Laboratories, February 8, 1994.

Deposition and Testimony of Gustavo E. Bamberger in the Matter of: Michael R. Sparks, Debtor: In the United States Bankruptcy Court for the Northern District of Illinois, Eastern Division, No. 92 B 21692, May 9, 1994 (Deposition and Testimony).

Joint Affidavit and Joint Reply Affidavit of John P. Gould and Gustavo E. Bamberger in Re: In the Matters of Review of the Pioneer's Preference Rules and Amendment of the Commission's Rules to Establish New Personal Communications Services: Proceedings before the Federal Communications Commission, ET Docket 93-266. Gen. Docket 90-314, July 26, 1994 (Affidavit); and August 8, 1994 (Reply Affidavit).

Statement of John P. Gould and Gustavo E. Bamberger on Implementing Legislation for the Uruguay Round of GATT (S. 2467) (Pioneer Preference Provisions) Before the Senate Commerce Commission, November 14, 1994.

Report and Deposition of Gustavo E. Bamberger in Re: Khan, et al. v. State Oil Company; In the U.S. District Court for the Northern District of Illinois, Eastern Division, No. 94 C 00035, May 30, 1995 (Report); and July 27, 1995 (Deposition).

Statement and Supplemental Statement of Alan O. Sykes and Gustavo E. Bamberger in Re: Fresh Tomatoes and Bell Peppers, Investigation No. TA-201-66, United States International Trade Commission, June 3, 1996 (Statement); and June 10, 1996 (Supplemental Statement).

Testimony of Gustavo E. Bamberger in Re: Wisconsin Public Service Corporation; WPS Energy Services, Inc.; and WPS Power Development, Inc.: Before the Federal Energy Regulatory Commission, Docket No. ER96-1088-000, July 22, 1996.

Pre-Filed Direct, Rebuttal and Re-Direct Testimony of Gustavo E. Bamberger in Re: Disapproval of Rate Filings for American Casualty Company of Reading, Pennsylvania, and Continental Casualty Company, Before the State Office of Administrative Hearings (Texas), SOAH Docket No. 454-96-0800, September 10, 1996 (Direct); September 16, 1996 (Rebuttal); and September 27, 1996 (Re-Direct),

Affidavit of Gustavo E. Bamberger in Re: Summit Family Restaurants Inc., a Delaware Corporation; HTB Restaurants Inc., a Delaware Corporation; and CKE Restaurants Inc., a Delaware Corporation vs. HomeTown Buffet, Inc., a Delaware Corporation; and Buffets, Inc., a Minnesota Corporation: In the U.S. District Court for the District of Utah, Central Division, No. 96 CV 0688B, September 17, 1996.

Report, Supplemental Report, Affidavit, Deposition and Affidavit of Gustavo E. Bamberger in Re: Blue Cross & Blue Shield United of Wisconsin, and Compcare Health Services Insurance Corporation v. The Marshfield Clinic and Security Health Plan of Wisconsin, Inc.: In the U.S. District Court for the Western District of Wisconsin, No. 94-C-0137-C, December 19, 1996 (Report with William J. Lynk); February 10, 1997 (Supplemental Report William J. Lynk); March 10, 1997 (Affidavit with William J. Lynk); March 18, 1997 (Deposition); and April 4, 1997 (Affidavit).

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Declaration, Deposition and Affidavit of Gustavo Bamberger in Re: Issuer Plaintiff Initial Public Offering Antitrust Litigation and Public Offering Fee Antitrust Litigation: In the U.S. District Court for the Southern District of New York, 00 Civ. 7804 (LMM) (DFE) and 98 Civ. 7890 (LMM), September 16, 2004 (Declaration); January 27, 2005 (Deposition); and October 24, 2005 (Affidavit).

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Declaration of Gustavo Bamberger in Re: USG Corporation, a Delaware corporation, et al., Debtors, USG Corporation, et al., Movant v. Official committee of Asbestos Personal Injury Claimants, Official Committee of Unsecured Creditors, Official Committee of Asbestos Property Damage Claimants and Legal Representative for Future Claimants, Respondents: In The U.S. District Court For The District Of Delaware, Chapter 11, Jointly Administered, Case No. 01-2094 (JKF), Civil Action No. 04-1559 (JFC) Civil Action No. 04-1560 (JFC), September 28, 2005.

Declaration, Deposition and Testimony of Gustavo Bamberger in Re: Marvin D. Chance, Jr.. on behalf of himself and all other similarly situated Kansas residents, Thomas K. Osborn, on behalf of himself and all other similarly situated New York residents v. United States Tobacco Company, United States Tobacco Sales and Marketing Company, Inc., United States Tobacco Manufacturing Company, Inc., and UST, Inc.: In the District Court of Seward County, Kansas, Case No. 02-C-12, September 29, 2005 (Declaration); November 1, 2005 (Deposition); and January 19, 2006 and April 4, 2006 (Testimony).

Expert Report, Rebuttal Report and Deposition of Gustavo Bamberger in Re: Jame Fine Chemicals, Inc. (d/b/a JFC Technologies) v. Hi-Tech Pharmacal Co., Inc. v. MedPointe Inc. as successor in interest to and formerly known as Carter-Wallace, Inc., and ABC Corporation and XYZ, Inc., companies and/or corporations whose true identities are unknown to Third-Party Plaintiff: In the U.S. District Court for the District of New Jersey, Civil Action No. 00-3545 (AET), October 3, 2005 (Report); May 8, 2006 (Rebuttal Report); and June 15, 2006 (Deposition).

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Rebuttal Testimony of Gustavo Bamberger on Damages and Deposition in Re: Tessera, Inc. vs. Micron Technology, Inc., Micron Semiconductor Products, Inc., Infineon Technologies AG, Infineon Technologies Richmond, LP, and Infineon Technologies North America Corp. and Qimonda AG: In the U.S. District Court for the Eastern District of Texas, Marshall Division, Case No. 2:05CV-94, June 23, 2006 (Rebuttal Testimony) and July 22, 2006 (Deposition).

Expert Report and Deposition of Gustavo Bamberger in Re: Electronic Data Systems Corporation and EDS Information Services, L.L.C. v. MCI Communications Services, Inc.: American Arbitration Association, Arbitration No. 13 181 00976 06, July 20, 2006 (Expert Report); and August 11, 2006 (Deposition).

Declaration, Revised Declaration and Deposition of Gustavo Bamberger in Re: Jason Feuerabend, a Wisconsin resident, on behalf of himself and all others similarly situated v. UST Inc., U.S. Smokeless Tobacco Brands Inc., U.S. Smokeless Tobacco Co., U.S. Smokeless Tobacco Manufacturing Limited Partnership, and Does 1-20 inclusive: In the Circuit Court of Milwaukee County, Wisconsin, Case No. 02CV007124, September 21, 2006 (Declaration); December 1, 2006 (Revised Declaration); and December 5, 2006 (Deposition).

Expert Report of Gustavo Bamberger in Re: Ronald Alcorn, d/b/a Highland Park Amoco; et al. vs. BP Products North America, Inc.: In the United States District Court for the District of Minnesota, Court File No. 04-120 (PAM/JSM), October 23, 2006.

Declaration of Gustavo Bamberger in Re: Smokeless Tobacco Cases I-IV: In the Superior Court of the State of California, City and County of San Francisco, Judicial Council Coordination Proceeding Nos. 4250, 4258, 4259 & 4262, March 21, 2007.

Testimony of Gustavo Bamberger before the Arkansas Oil and Gas Commission, April 25, 2007.

Exhibit B

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Cornell University, Ithaca, New York
M.S. (consumer economics), 1993

Millikin University, Decatur, Illinois
B.A. (economics, mathematics), 1990

CONSULTING EXPERIENCE

Lexecon, Chicago, Illinois (August 1994 to Present): Vice President

FELLOWSHIPS AND ACADEMIC HONORS

Helen Canon Scholarship, Ruth Ada Birk Eastwood Scholarship, Mabel A. Rollins Scholarship, Jean Warren Fellowship, Alumni Fellowship, 1992-1993

ARTICLES

"Price and Profit", co-authored with W. Lynk, Journal of Health Economics, January 1999

"An Empirical Investigation of the Competitive Effects of Domestic Airline Alliances," co-authored with G. Bamberger and D. Carlton, Journal of Law and Economics, April 2004.

TESTIMONIAL EXPERIENCE

Statement of Gustavo Bamberger and Lynette Neumann, Further Statement of Gustavo Bamberger and Lynette Neumann, Updated Analysis of Effect of RSN Availability on DBS Penetration; Analysis of the Effect of "Clustering" on the Availability and Penetration of Digital Cable, High-speed Data and Telephony Services; and Supporting Declaration of Gustavo Bamberger and Lynette Neumann in Re: Applications of Adelphia Communications Corporation, Comcast Corporation, and Time Warner Cable Inc., For Authority to Assign and/or Transfer Control of Various Licenses: Before the Federal Communications Commission, MB Docket No. 05-192, July 21, 2005 (Statement); March 1, 2006 (Further Statement); March 17, 2006 (Updated Analysis); March 30, 2006 (Effect of "Clustering"); and April 5, 2006 (Supporting Declaration).